



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/569,546

03/17/2006

Airy-Pierre Lamaze

06017

7732

23338 7590 03/24/2008
DENNISON, SCHULTZ & MACDONALD
1727 KING STREET
SUITE 105
ALEXANDRIA, VA 22314

EXAMINER

BELL, BRUCE F

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

03/24/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/569,546	Applicant(s) LAMAZE, AIRY-PIERRE	
	Examiner Bruce F. Bell	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34,36 and 37 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20,26,29,30,32,33,36 and 37 is/are rejected.
- 7) ☒ Claim(s) 21-25,27,28,31 and 34 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>2/27/06</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (d) BRIEF SUMMARY OF THE INVENTION.
- (e) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (f) DETAILED DESCRIPTION OF THE INVENTION.
- (g) CLAIM OR CLAIMS (commencing on a separate sheet).
- (h) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Regarding claims 1, 2, 4-9, 18, the word "means" is preceded by the word(s) "mechanical connection" or "complementary assembly means in an attempt to use a "means" clause to recite a claim element as a means for performing a specified function. However, since no function is specified by the word(s) preceding "means," it is impossible to determine the equivalents of the element, as required by 35 U.S.C. 112, sixth paragraph. See *Ex parte Klumb*, 159 USPQ 694 (Bd. App. 1967).

Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 19 is vague and indefinite with respect to the phrase “produces a loose assembly”. It is unclear as to what is meant by this phrase as set forth.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 4-16, 18, 19, 20, 26, 29, 30, 32, 33, 36 and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by D’Astolfo, Jr. et al (6558526).

D’Astolfo, Jr. et al disclose an inert anode assembly 12 having an array of inert anodes 14 that are electrically and mechanically fastened by a connector 16 to an insulating lid 18. The insulating lid 18 is connected to an electrically conductive support member 20. See col. 2, lines 32-41. The inert anode shape or size is that of a substantially cylindrical cup shaped inert anode and the inert anode can be made of a metal, ceramic, cermet, etc., which possesses satisfactory corrosion resistance and stability during the aluminum production process. See col. 2, lines 42-49. The connectors 16 may be made of a material that provides sufficient electrical conductivity and mechanical support for the inert anodes 14. Each connector 16 may be made of

Art Unit: 1795

Inconel. A highly conductive metal core of copper is provided inside of the Inconel sleeve. The connectors 16 are attached to the inert anodes by brazing, sintering and mechanical fastening. A connector having an Inconel sleeve and a copper core is attached to the cup shaped inert anode by filling the bottom of the inert anode with a mixture of copper powder and small copper beads, followed by sintering of the mixture to attach the copper core to the inside of the anode. Each connector 16 may include separate components for providing mechanical support and supplying electrical current to the inert anodes. See col. 2, line 66 – col. 3, line 14. A cell is shown that has been retrofitted with inert anode assemblies as set forth above. See col. 3, lines 39-41.

The prior art of D'Astolfo, Jr et al anticipates the applicants instant invention as shown by way of the disclosure above with respect to the instant claims as presented. D'Astolfo, Jr. et al shows an anode assembly that has a cup shaped anode (which the examiner construes as being the ladle) having a cavity, an open end, a wall surrounding the cavity, a closed end and a mechanical connection means. The patent further sets for a connection conductor by means of the connectors 16 that has a mechanical connection to the anodes 14. Further, the patent discloses that the anodes may be connected to the connector by way of brazing and even shows a joint of between the connector of Inconel and the anode wherein a copper insert is used to mate the Inconel connector to the anode. The mechanical connection by way of the connector 16 closes off the open end of the anode. The conductor 16 is shown in the drawings to be close to the connection end and is shown to have a collar or annular cavity and annular grooves by way of the Inconel, copper of the connector and the anode as seen in the patented

Art Unit: 1795

figure 3. The insertion of the anode into the connector is considered to be that of a friction or insertion fit, since after it is engaged, the connection may be mechanically connected and brazed. The copper insert is considered by the examiner to be that of the complementary assembly means and is in the shape of a ring. The recitation in the instant claims appears to be inherent since the inert anode assembly is brazed and used in an electrolytic aluminum production cell and since the brazed joint is one that has copper and uses Inconel which is a nickel based alloy. Further the inert anodes are taught to be made of a cermet material. The method of manufacturing the anode is also taught since all the features as set forth in the instant method have been found and the patent further discloses the mechanical attachment and the brazing steps, which in order to braze, a heat treatment step must be present. The insertion of the conductor into the anode is considered to be a loose assembly until such time as the operation has achieved a high enough temperature to make the proper mechanical and brazed connection together and therefore meets the "loose assembly" criteria in the instant claim. Since the patent discloses an Inconel (nickel) being used along with copper, it appears that when the brazing occurs, that the heat causes the nickel and copper to be incorporated into each other which would modify the two materials and therefore the heat causes the two materials to be modified and a joint is formed. The diffusion of the nickel into the copper and copper into the nickel is considered to be the brazing process. Therefore, the prior art of D'Astolfo, Jr. et al anticipates the applicants instant invention as set forth in the claims presented.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over D'Astolfo, Jr. et al (6558526).

D'Astolfo, Jr. et al is as disclosed above and further discloses that inert anodes of cermet materials are prone to thermal shock cracking. Therefore they should be preheated to approximately the operating temperature of the pot before they can be exchanged with a carbon anode. Preheated anode assemblies may be then transported to the cell. See col. 4, line 51—col. 5, line 3.

The subject matter as a whole would have been within the ability of the person having ordinary skill in the art at the time the instant invention was made because even though the prior art of D'Astolfo, Jr. et al does not disclose or a resistive heater, one having ordinary skill in the art would have the ability to use such heater to heat the anode since the prior art of D'Astolfo, Jr. et al sets forth that it is known in the art to heat the inert anodes to stop the cermet material from cracking. Further the prior art of D'Astolfo, Jr. et al shows the anode being enclosed in the connector and therefore it appears that the current density per unit area at the nominal intensity during use would be between 1 and 50 A/cm², since the same materials for the anode and connector are used in the prior art as are used in applicants' instant invention. Therefore, the prior art

Art Unit: 1795

of D'Astolfo, Jr. et al renders the applicants' instant invention as obvious for the reasons set forth above.

Allowable Subject Matter

5. Claims 21-25, 27, 28, 31 and 34 are allowable over the prior art of record.
6. Claims 21-25, 27, 28, 31 and 34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
7. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record fails to teach and/or suggest the brazing material to be modified using evaporation, chemical reaction, exchange by diffusion or exchanged by oxidation-reduction and further the prior art does not disclose use zinc or magnesium as the constituent elements. The prior art, additionally does not include a reservoir for flow of the brazing material into the reservoir before heat treatment and does not show that the anode is inclined to prevent flow of the brazing material into the cavity.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bruce F. Bell whose telephone number is 571-272-1296. The examiner can normally be reached on Monday-Friday 6:30 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1795

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BFB
March 18, 2008

/Bruce F. Bell/
Primary Examiner, Art Unit 1795